

**TWO NEW SPECIES OF OPIINAE (HYMENOPTERA: BRACONIDAE)
ATTACKING FRUIT-INFESTING TEPHRITIDAE (DIPTERA)
IN WESTERN KENYA**

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Abstract.—Two new species of Opiinae are described, *Rhynchosteres mandibularis* and *Fopius okekai*. Both were reared from puparia of fruit-infesting ceratitidine Tephritidae collected in western Kenya. The placement of these two species relative to the genera *Fopius* Wharton and *Rhynchosteres* Fischer is discussed, with emphasis on the transitional form of the clypeus. Arguments are presented for inclusion of these species in *Rhynchosteres* and the *Fopius desideratus* (Bridwell) species-group, respectively. This represents the first host record for the genus *Rhynchosteres*. Evidence is presented that suggests similarity in function has led to convergence in shape of the ovipositor tip in certain Opiinae and Doryctinae.

Key Words: parasitoids, fruit, *Fopius*, *Rhynchosteres*, *Ceratitis*, Araceae, Flacourtiaceae

Fruit-infesting Tephritidae support a diverse array of parasitoids (Clausen et al. 1965, Hoffmeister 1992, Hoffmeister and Vidal 1994, Sivinski et al. 1998, Wharton et al. 2000). Among the best-studied of these are members of the opiine Braconidae. Opiines oviposit in the host egg or larval stage and emerge from the puparium. About 100 species of opiines have been recorded as parasitoids of fruit-infesting Tephritidae, largely in association with biological control programs (Silvestri 1914; Clausen 1978; Fischer 1971; Wharton 1997, 1999; Ovruski et al. 2000).

The opiine parasitoids of tephritids are particularly diverse in the Afrotropical Region, with several genera and species-groups represented (Fischer 1987, Wharton 1997). The apparent high diversity may in part reflect a sampling bias since extensive rearings of both wild and commercial fruits, focused specifically on parasitoids, have

been conducted on several occasions (Silvestri 1914, Bianchi and Krauss 1937, van Zwaluwenburg 1937, Clausen et al. 1965, Steck et al. 1986). Nevertheless, recent rearings of wild fruits in Kenya, as well as the examination of incompletely identified material from older collections, suggest that our knowledge of the diversity of parasitoids in this host system is far from complete.

To increase our understanding of both the alpha and beta diversity of Afrotropical tephritid parasitoids, we describe two species whose clypeal morphology is somewhat intermediate between members of the genus *Fopius* Wharton and those of the genus *Rhynchosteres* Fischer. We also discuss the potential impact of the discovery of these species on existing classifications proposed or used by Fischer (1987, 1999), van Achterberg and Maetô (1990), Wharton (1997), and van Achterberg (1999).

MATERIALS AND METHODS

Primary types and other material used for comparison in the present study came from the following institutions and individuals: The Hungarian Natural History Museum, Budapest, Hungary (J. Papp); Texas A&M University Insect Collection, College Station, Texas, USA (TAMU); Bernice P. Bishop Museum, Honolulu, Hawaii, USA (G. Nishida, K. Arakawa); International Centre of Insect Physiology and Ecology, Nairobi, Kenya (ICIPE); Koninklijk Museum voor Midden Afrika, Tervuren, Belgium (E. De Coninck); and National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA (D. Smith). Additionally, samples of wild fruits were collected throughout Kenya from 1998–2000, and processed in the laboratory to obtain emerging flies and parasitoids. Kenyan specimens used in this study were obtained primarily from Kakamega (western Kenya), the Kenyan Highlands around Nairobi, and the coastal region north and south of Mombasa. Collected fruits were held in cages above sand until tephritid flies emerged to pupate in the soil. Puparia were hand-sorted from the soil after about 2 weeks, and held in separate cages for emergence of adult flies and wasps. Field-collected fruit samples yielding the parasitoids described here were processed at ICIPE in Nairobi. Both of the species described below were reared from tephritid puparia collected in Kakamega. This study represents a collaborative effort, with the senior author assuming primary responsibility for preparation of the species descriptions and the junior author primarily responsible for the discussion of ovipositor and clypeal morphology.

Terminology for the descriptions follows Sharkey and Wharton (1997) and Wharton (1997). Additionally, details of the ovipositor tip are important in distinguishing species and possibly species-groups within the Opiinae. The species described here have what has been referred to as a double dorsal node (Wharton 1997). However, this is a

general description that does not adequately describe the differences in detail among species and species-groups. In the type species of *Diachasmimorpha* Viereck, for example, the double dorsal node is delimited basally by an abruptly elevated section that tapers gradually to the apex (Wharton 1997, figs. 87, 88). Near the middle of this tapered section, there is a second elevation that is weakly excavated on its basal face. In the species described here, the double dorsal node has a different appearance since it lacks the basal excavation on the second node (Fig. 15). To differentiate the two conditions, we describe the form in the species treated here as a dorsal node with a more distally placed secondary tooth. Quicke et al. (1992) also described a double dorsal node in doryctine Braconidae, suggesting that the distinctively shaped apex of the dorsal valve of the ovipositor provided a synapomorph for the Doryctinae. The shape of the nodes in the two species described below differs from those of the typical doryctines figured by Quicke et al. (1992).

RESULTS AND DISCUSSION

Morphology of the ovipositor.—The distinctive doryctine double dorsal node was not found in any of the other cyclostomes nor in any of the non-cyclostome braconids examined by Quicke et al. (1992). The doryctine double dorsal nodes tend to be excavated on the apical face, whereas the opiine nodes are usually excavated or truncated on their basal face. However, as demonstrated here for opiines as well as in a few of the typical doryctines figured by Quicke et al. (1992), the forms converge in their reduced states (e.g., when the excavated surfaces and marginal ridges are less distinct). The condition described here for *Fopius* is thus somewhat intermediate between that found in some of the doryctines figured by Quicke et al. (1992) and those opiines previously described as having a double dorsal node by Wharton (1997). While the findings of Quicke et al. (1992) represent an important advancement in our

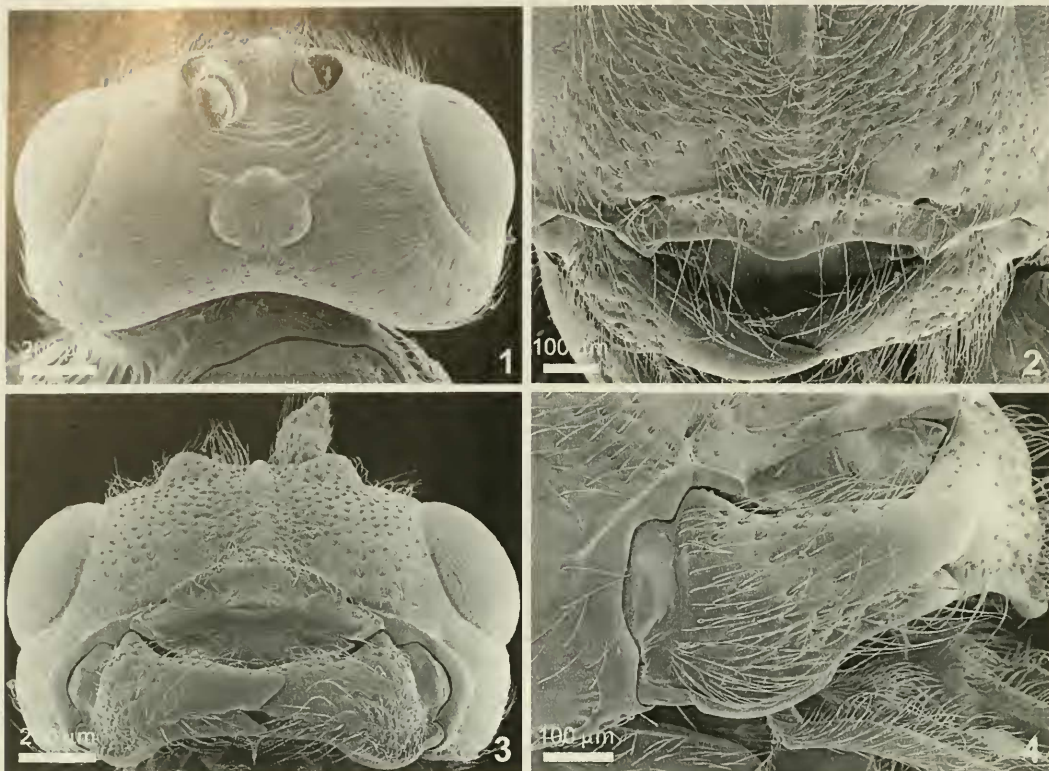
understanding of doryctines, more detailed surveys are obviously needed to determine the extent to which the shape and number of nodes can be used unambiguously as diagnostic features for higher taxa. The nodes found on dorsal valves of various braconids and ichneumonids most likely represent reductions from the elaborately sculptured valves of siricoids, but it appears as if different structural elements may have been lost in the doryctines relative to the opiines. The end result is convergence in form, possibly for the same general function.

The mechanics of drilling into hard substrates have been recently described in superb detail by Vincent and King (1996), and a good overview of the morphology of the ovipositor in Hymenoptera is provided by Quicke et al. (1994). As pointed out by both Vincent and King (1996) and Quicke et al. (1999), dorsal nodes and ventral serrations are important attributes for species drilling through wood. Quicke et al. (1999), summarizing previous findings on the structure and function of the ovipositor, observed that endoparasitic ichneumonoids almost always have the dorsal node reduced and typically have less well-developed ventral serrations. However, the dorsal node is clearly well-developed in the species described below, as it is in several other opiines attacking fruit-infesting Tephritidae. The ventral serrations in opiines do tend to be less extensive than in most doryctines, but are still well developed in species of *Fopius* and *Diachasmimorpha* attacking late instar larvae embedded in fruit. Since some endoparasitoids (such as these opiines) must also drill to locate hosts, it is thus not surprising to find similar structures in these species. If dorsal nodes and ventral serrations are associated more with drilling through substrates than with developmental phenomena such as endoparasitism and ectoparasitism, we should expect to find them in other endoparasitoids that must drill through solid (or at least firm) substrates to find hosts.

Morphology of the clypeus and the tran-

sition from *Fopius* to *Rhynchoστεres*.—Variation in the clypeal morphology of opiine Braconidae has received considerable attention in the development of classifications for these wasps. Fischer (1972), for example, used the relative size of the clypeus and the presence of apical tubercles as the principle diagnostic features for genera within his subtribe Biosterina. He also used some of the same character states for differentiating subgenera of *Opius* as well as other genera outside the tribe Opiini. Wharton (1988, 1997) provided additional details regarding the morphology of the opiine clypeus and its utility in constructing classifications.

Rhynchoστεres was described by Fischer (1965) for three Afrotropical species with elaborate modifications of the clypeus and varying degrees of exposure of the underlying labrum. Wharton (1987) initially described *Fopius* as a subgenus of *Rhynchoστεres* Fischer, noting a number of similarities between the two despite obvious differences in the form of the clypeus. Wharton (1987) also noted that within *Fopius* s. s., the clypeus was somewhat plastic, showing variation among species in protrusion of the ventral margin. Van Achterberg and Maetô (1990) elevated *Fopius* to generic status, stating that the strongly protruding clypeus of *Rhynchoστεres* was sufficient to maintain the two taxa as distinct, and suggesting that any similarities were symplesiomorphs. Van Achterberg and Maetô (1990) concluded that *Fopius* was more closely related to *Pseudorhinoplus* Fischer and *Diachasmimorpha* than to *Rhynchoστεres*. Wharton (1997, 1999) maintained *Fopius* as a separate genus, segregated and briefly diagnosed several species-groups, but noted that members of the *Fopius desideratus* (Bridwell) species-group shared a number of putative apomorphic features with members of the genus *Rhynchoστεres*. Quicke et al. (1997) and Fischer (1999) have further discussed the relationships and classification of this group of tephritid parasitoids but only in general

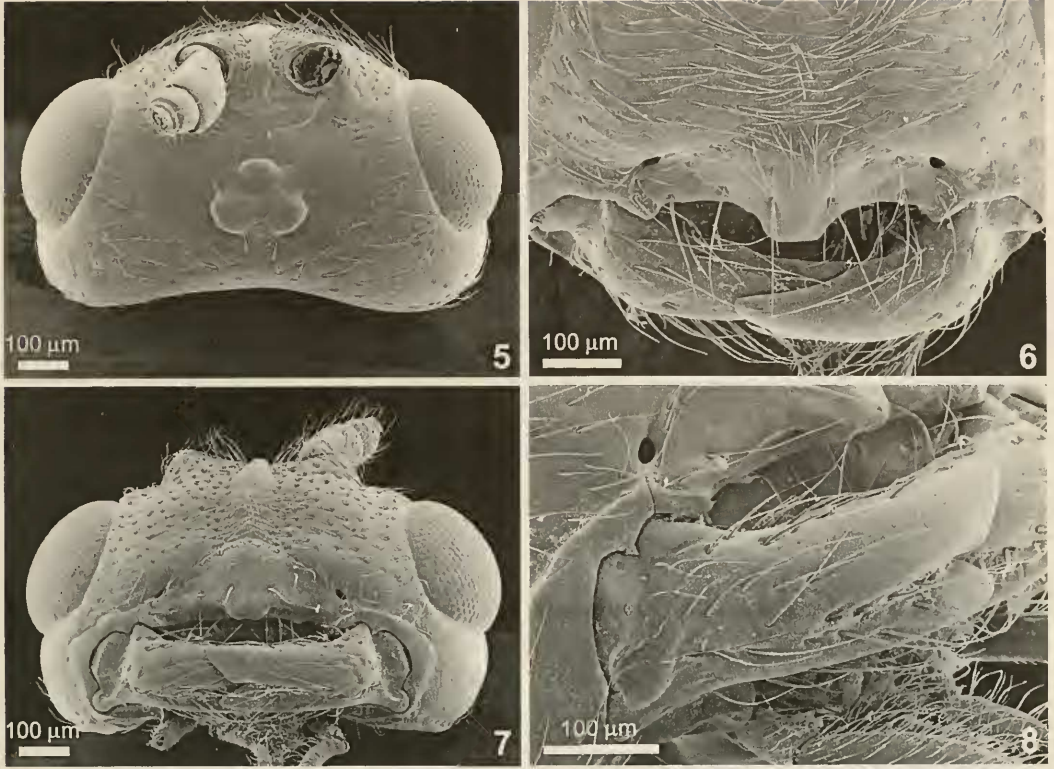


Figs. 1–4. *Rhynchosteres mandibularis*, head. 1, Dorsal view. 2, Frontal view centered on face. 3, Frontal view centered on mandible and labrum. 4, Oblique view showing rounded basal lobe of mandible and medially thickened, weakly up-turned clypeus.

terms since they treated only a few of the included species.

In the type species of *Rhynchosteres*, the middle portion of the clypeus is nearly tubular and protrudes like an inverted gutter from the middle of the face. As noted by Fischer (1965), van Achterberg (1983), and Wharton (1997), however, the shape of the clypeus varies among the described species. This variation in the structural details of the clypeus makes it challenging to define unambiguously the specific character state that supports the monophyly of *Rhynchosteres*. All five previously described species have the clypeus bulging medially. In *R. microps* Fischer, *R. tuberculatus* van Achterberg, and *R. tubiformis* Fischer, the protruding part of the clypeus is thin-walled, with a tunnel-like cavity varying from ventrally-directed to anteriorly-directed in an apparent

transition series. In *R. clypeatus* (Bridwell) and *R. brunigaster* Fischer, however, the clypeus is thickened ventral-medially, revealing a weakly excavated, polished surface. The two species described below exhibit clypeal modifications that tend to blur the distinctions between *Rhynchosteres* and other opiine genera, but in different ways. In the newly discovered species reared from *Rawsonia* fruits, the clypeus is short and the ventral margin is thickened, slightly up-turned, and weakly protruding medially (Figs. 2–4, 9). The clypeus in this species clearly resembles that of *R. clypeatus*, but is less obviously protruding and consequently less obviously a member of *Rhynchosteres*. In the second species described below, reared from *Culcasia* fruits, the clypeus retains its full height along the midline as in *Fopius* s. s., but the ventral mar-



Figs. 5–8. *Fopius okeikai*, head. 5, Dorsal view. 6, Frontal view centered on clypeus. 7, Frontal view centered on mandible. 8, Oblique view showing partially exposed labrum and unmodified mandible.

gin is excavated on either side of the midline, thus exposing a portion of the labrum (Figs. 6–8). Lateral shortening may not be a prerequisite for the development of the tube-like medial modifications seen in the *microps-tuberculatus-tubiformis* series, but would certainly facilitate it.

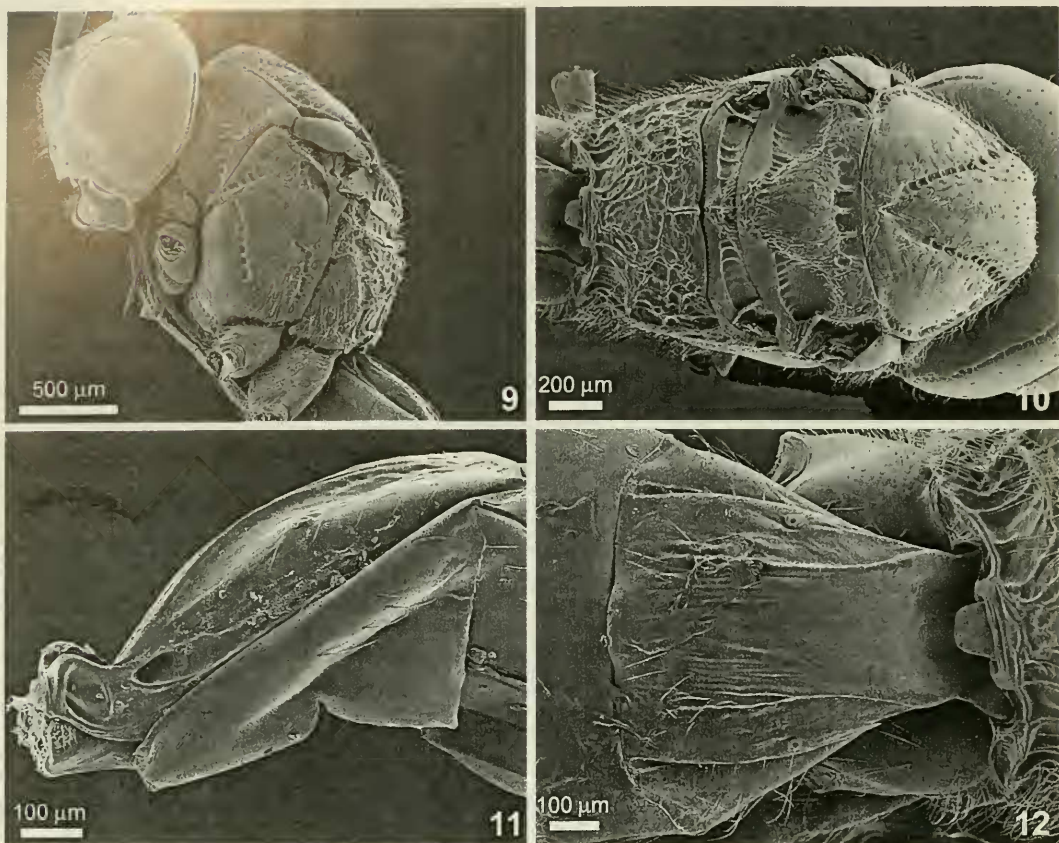
The discovery of the two species described here will almost certainly require a reassessment of the generic status of *Fopius*, and minimally a transfer of the *desideratus* species-group to *Rhynchosteres*. The primary purpose of the present paper, however, is to make the names available so that further work on their biology and relationships can proceed. Thus, one of the two species described below is tentatively placed in the *Fopius desideratus* species-group and the other in *Rhynchosteres*. Shared features possessed by known species of *Rhynchosteres* and the *desideratus*

group include transversely striate frons (usually forming a crescent-shaped pattern), a double dorsal node on the ovipositor, and a decrease in density of setae on the ovipositor sheath (Figs. 1, 5, 14, 15). Unlike members of the genus *Diachasmimorpha* (as defined by Wharton 1997), the species of *Fopius* and *Rhynchosteres* possess an oblique groove/ridge on the propleuron. They also have a distinct post-pectal carina and a small second submarginal cell from which the m-cu cross-vein is excluded. The latter features are homoplastic within the Opiinae, but are useful for recognition of these genera.

***Rhynchosteres mandibularis*
Kimani-Njogu and Wharton,
new species**

(Figs. 1–4, 9–12, 14, 15, 17, 18)

Types.—Holotype ♀: Top label = “KENYA: Western Prov. Kakamega.



Figs. 9–12. *Rhynchosteres mandibularis*. 9, Lateral view of head and mesosoma. 10, Dorsal view of mesosoma. 11, Lateral view of petiole showing deep laterope. 12, Dorsal view of petiole.

0°13.1'N, 34°54.06'E 3.viii.1999 R. Copeland". Second label = "reared from Tephritidae in fruits of *Rawsonia lucida*". Third label = "collection # 217 ICIPE/USAID rearing program". Deposited in National Museums of Kenya, Nairobi. Paratypes: 4 ♀, 2 ♂, same data as holotype, deposited at ICIPE and Texas A&M University.

Diagnosis.—This species closely resembles *R. clypeatus* in many respects, but the mesosoma is distinctly darker in *mandibularis*. In *clypeatus*, the median tooth (or tubercle) of the clypeus is dorsally displaced relative to the remaining portion of the ventral margin. In *mandibularis*, however, the ventral-median section of the clypeus (in frontal view, Fig. 2) extends slightly ventrad the lateral margin. This new species

can be separated from nearly all other opiines placed in either *Fopius* or *Rhynchosteres* by the possession of a rounded, thickly carinate lobe at the base of the ventral margin of the mandible (Figs. 3, 4). The rounded form of this structure is completely different from the more truncate or tooth-like lobe found in *Biosteres* s.s. A basal lobe is also found in *clypeatus*, but is not quite as rounded, nor as thickly carinate. The striate frons and double dorsal node on the ovipositor are identical to features found in members of the *Fopius desideratus* species-group. Unlike *mandibularis*, however, previously described members of the *desideratus* group do not have the clypeus shortened and the labrum broadly exposed. The clypeus of *mandibularis* is neither as protruding nor tunnel-shaped as in

described species of *Rhynchosteres*, though it approaches the form of the clypeus in *clypeatus*, and is similarly shortened.

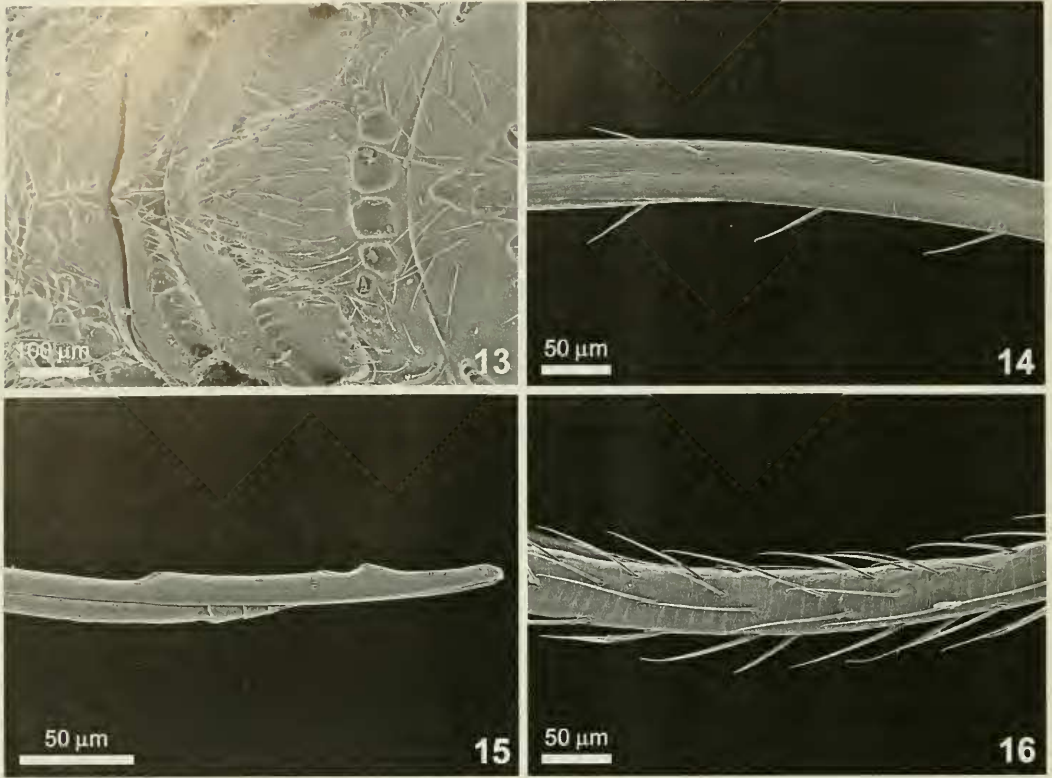
Description.—Female. *Length*: 4.0–5.0 mm.

Head: 1.45–1.50 times broader than long; 1.35–1.40 times broader than mesoscutum. Face (Figs. 2, 3) densely setose and punctate, punctures mostly discrete with little or no indication of rugosity, setae long, mostly decumbent and medially directed, those near inner margin of eye more ventrally directed and less decumbent; midridge polished, prominent, distinctly elevated, gradually narrowing dorsally and extending between toruli. Distance between toruli shorter than distance from torulus to eye. Frons (Fig. 1) punctate laterally and between toruli, punctures confluent or nearly so on inner side of toruli; frons medially (including at least part of ocellar field) with crescent-shaped striae. Impressed line bordering ocellar triangle largely obscured by transverse striae. Vertex (Fig. 1) smooth, highly polished on either side of ocelli; sparsely punctate laterally near compound eyes and posteriorly along occiput. Occipital carina in lateral view (Fig. 9) prominent, extending dorsally from base of mandible to a point just above middle of eye. Clypeus in profile (Fig. 9) weakly bulging dorsomedially; in frontal view (Figs. 2–4) with ventral margin protruding medially; ventral margin of clypeus thickened; labrum broadly exposed between somewhat shortened clypeus and ventrally deflected mandibles; setae on clypeus erect or nearly so, weakly directed ventrally. Eye 3.5 times longer than temple, with a few, very short, scattered setae. Temples in dorsal view (Fig. 1) slightly receding, width of head at temples less than width at eyes. Antenna with 42–43 segments; roughly 4 times longer than mesosoma; first flagellomere about 0.9 times length of second. Outer surface of mandible (Figs. 3, 4) convex basally and apically, somewhat flattened medially; ventral margin with broad, rounded, densely setose basal lobe, the margin of the lobe

thickly carinate. Maxillary palps much longer than height of head.

Mesosoma (Figs. 9–10): 1.35 times longer than high; 1.85–1.90 times longer than broad. Median lobe of mesoscutum setose and punctate with punctures widely scattered posteriorly, sometimes weakly rugulose near midpit. Lateral lobes impunctate medially, with scattered punctures and relatively long inwardly directed setae around margins. Notauli broad at base, narrow posteromedially, distinctly crenulate throughout length, meeting posteriorly in a clearly defined midpit that extends narrowly towards posterior margin. Midpit broadly and very shallowly depressed. Space between midpit and scutellar sulcus smooth with scattered long setae directed outwardly towards lateral lobes. Scutellar sulcus broader medially than laterally, the posterior margin with a distinct median excavation; with 5 widely spaced longitudinal ridges. Scutellum densely setose, setae directed posteriorly; distinctly but finely punctate over most of surface, punctures elongate; transverse band of rugulose sculpture present posteriorly. Metanotum with distinctly elevated median ridge. Propodeum rugose, with a short median longitudinal carina on basal 0.25 and with crescent-shaped, transverse carina usually discernible among rugose sculpture; with long, well-spaced setae laterally, nearly bare medially; propodeum separated from metapleuron by well defined crenulate groove. Metapleuron smooth, at least on dorsal half; densely covered with ventrally-directed setae. Sternaulus broad, with deep pits, crenulate throughout; extending from anterior margin of mesopleuron at least 0.75 the distance to mid coxa.

Wings (Figs. 17–18): Fore wing stigma broad, 3.8–4.0 times longer than wide; r arising slightly distad its midpoint; 2RS weakly sinuate, nearly straight, 1.4–1.5 times longer than 3RSa; 3RSa 2.5 times longer than r; 3RSb ending nearly at wing tip; (RS+M)a sinuate; (RS+M)b present, m-cu arising distinctly basad 2RS; IM strongly bent posteriorly; 1cu-a inclivous,



Figs. 13–16. 13, *Fopius okekai*, dorsal view of mesosoma. 14, *Rhynchosteres mandibularis*, setal pattern along middle of ovipositor sheath. 15, *R. mandibularis*, apex of ovipositor. 16, *Fopius* sp. near *silvestrii*, setal pattern along middle of ovipositor sheath.

postfurcal relative to 1M. Hind wing m-cu very weakly curved towards wing base; extending nearly to wing margin as a faint crease, very weakly pigmented anteriorly, barely visible posteriorly.

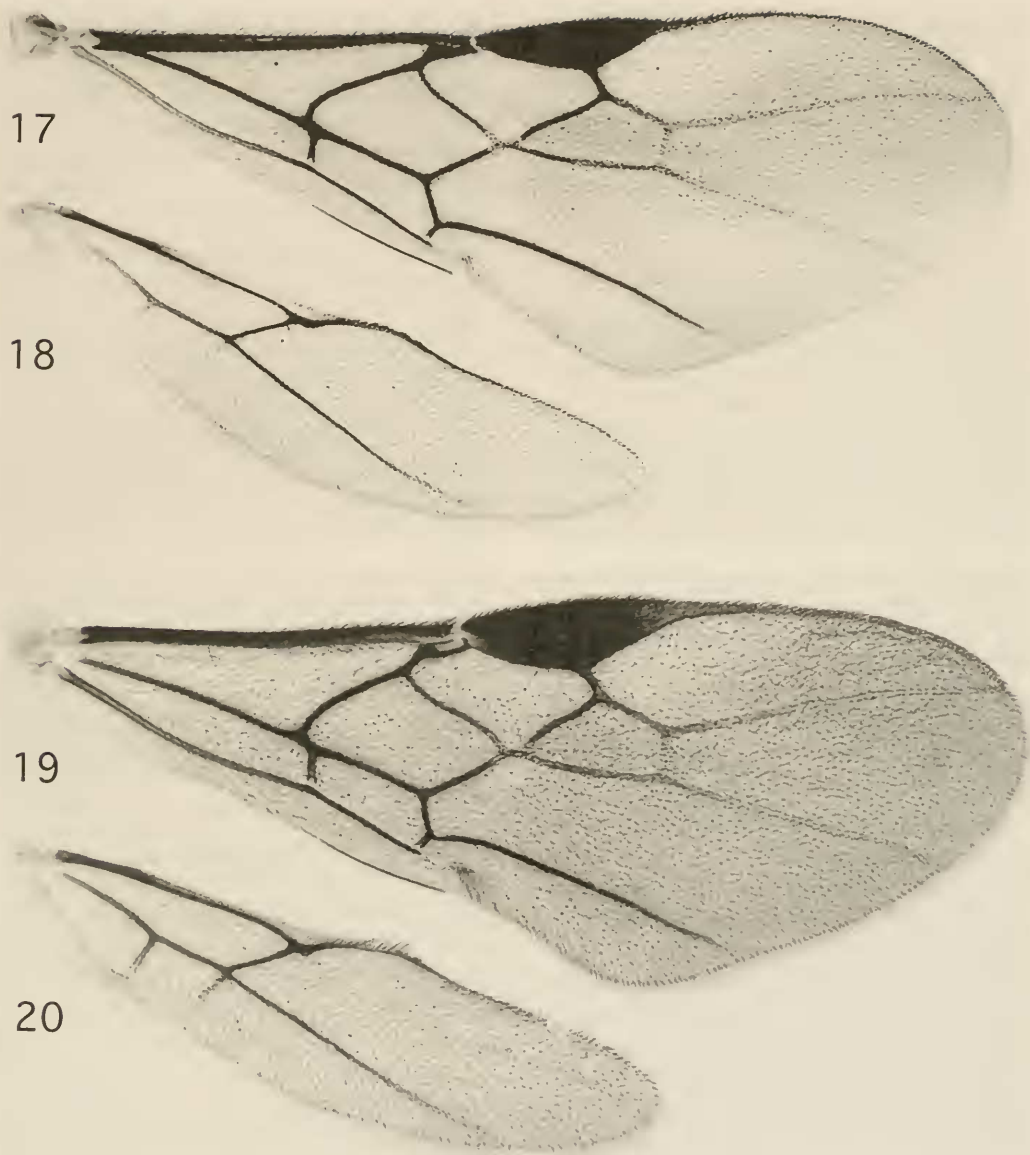
Metasoma: Petiole (Figs. 11, 12) 1.5 times longer than apical width, apex 1.8 times wider than base; finely striate; dorsal carinae well-developed over basal 0.8, indistinct toward posterior margin; dorsope absent, laterope present as a deep pit. Metasoma unsculptured beyond petiole. Hypopygium strongly narrowed and pointed posteriorly but short, not greatly attenuated. Ovipositor tip (Fig. 15) with a dorsal node, and a small, more distally placed secondary tooth. Ovipositor sheath sparsely setose basally (Fig. 14), with about 3 rows of short to very short, well-spaced setae, setae more dispersed apically, with only two apparent

rows; sheath longer than body, 2.5 times longer than mesosoma.

Color: Head, mesosoma, ovipositor sheath, wing veins, and last three metasomal terga brown to very dark brown; hind tibia and tarsi dorsally brown; metapleuron, propodeum laterally and most of metanotum orange; petiole, basal segments of gaster, scape, annellus, and remainder of legs yellow.

Male.—About as in female except antenna 42–45 segmented; mandibles not as strongly deflected ventrally, thus labrum only narrowly exposed; scutellar sulcus with 3 ridges; transverse carina of propodeum not discernible; metasomal terga 4 and following black.

Discussion.—The plant host is a member of the Flacourtiaceae. Three species of Tephritidae have been reared from this host



Figs. 17–20. Fore and hind wings. 17, 18, *Rhynchosteres mandibularis*. 19, 20, *Fopius okekai*.

plant in Kenya: *Ceratitis anonae* Graham, *C. rosa* Karsch var. *fasciventris* (Bezzi), and an undescribed species of *Trirhithrum* Bezzi. Only one of these (the *Trirhithrum*) was reared from the same batch of puparia that yielded the type series. These puparia were isolated from a collection of 165 fruits. The undescribed species of *Trirhithrum* (family Tephritidae) is the first confirmed host record for the genus *Rhynchosteres*.

Etymology.—The species name refers to the enlarged basal lobe of the mandible.

Fopius okekai
Kimani-Njogu and Wharton,
new species

(Figs. 5–8, 13, 19, 20)

Types.—Holotype ♀: Top label = “KENYA: Western Prov. Kakamega, along Yala River Trail, 0°12.34'N, 34°53.57'E

1.v.2000 R. Copeland". Second label = "reared from Tephritidae in fruits of *Culcasia fakifolia*". Third label = "collection # 639 ICIPE/USAID rearing program". Deposited in National Museums of Kenya, Nairobi. Paratypes: 2 ♂, same data as holotype, deposited at ICIPE and Texas A&M University.

Diagnosis.—This species is recognized as a member of the *Fopius desideratus* species-group by the enlarged clypeus plus the combination of features noted in the morphology section above that are shared by *Rhynchosteres* and the *desideratus* species-group. The ventral margin of the clypeus is strongly protruding medially as a truncate tooth in this species (Figs. 6–8). A median projection is also present (though not as well developed) in *F. ottotomoanus* and *F. niger*, the two species with which it is most likely to be confused. In *okekai*, the ventral margin of the clypeus on either side of the projection is weakly concave, exposing a portion of the labrum and making the projection appear more prominent. In *okekai*, the projection is directed ventrally whereas in *ottotomoanus* and *niger* it is directed more anteriorly and thus protrudes more from the face. The mandible is normal in *okekai*, lacking the rounded basal lobe on the ventral margin found in *mandibularis*. It is also a darker species than *mandibularis*, has a more distinctly punctate scutellum, a better-developed hind wing m-cu, and a less prominent secondary tooth on the ovipositor.

Description.—Female. *Length*: 4.0 mm.

Head: 1.35 times broader than long; 1.45 times broader than mesoscutum. Face (Figs. 6, 7) densely setose and punctate throughout, pattern variable, space between most punctures greater than diameter of punctures, but some punctures nearly confluent, suggesting rugulose sculpture; setae as in *mandibularis*; midridge distinctly elevated, polished, narrower dorsally, extending between toruli. Distance between toruli almost equal to distance from torulus to eye. Frons (Fig. 5) with sculpture and setal pat-

tern about as in *mandibularis*, but striae much weaker, not extending posteriorly to median ocellus, thus surface appearing more extensively smooth and polished. Ocellar triangle almost completely margined by an impressed line. Vertex and occipital carina as in *mandibularis*. Clypeus in profile weakly bulging dorsomedially; ventral margin of clypeus (Fig. 6) with a strongly protruding rectangular projection; labrum (Fig. 8) partially exposed between somewhat shortened clypeus and ventrally deflected mandibles; setae on clypeus sparse, at least twice as long as those in middle of face, erect or nearly so. Eye apparently bare; large, 3 times longer than temple. Temples in dorsal view receding, width of head at temples less than width at eyes. Antenna 35 segmented; roughly 3.7 times longer than mesosoma. 1st flagellomere about 0.8 times length of second. Mandible (Fig. 8) normal, outer surface distinctly convex, ventral margin without expanded lobe basally. Maxillary palps much longer than height of head.

Mesosoma (Fig. 13): 1.4 times longer than high; 1.9 times longer than broad. Median lobe of mesoscutum setose as in *mandibularis*, with unevenly spaced punctures; lateral lobes with numerous, relatively long setae around margins, bare and impunctate medially. Notauli distinctly crenulate throughout, meeting posteriorly in a clearly defined midpit that extends slightly onto median lobe anteriorly as a sculptured groove, midpit with irregular sculpture. Mesoscutum otherwise as in *mandibularis*. Scutellar sulcus parallel-sided or nearly so. Scutellum uniformly setose; with deep, elongate punctures clearly visible beneath weakly decumbent setae; transverse band of sculpture distinctly rugose. Metanotum about as in *mandibularis*, with distinctly elevated median ridge but more prominently carinate lateral fields. Propodeum densely rugose, with median carina on basal 0.5 and with irregular, transverse carina discernible among rugose sculpture; setal pattern as in *mandibularis*; propodeum not distinctly

separated from metapleuron laterally, the demarcation represented only by the transition across a shallow groove to the weakly sculptured dorsal portion of the metapleuron. Metapleuron and sternaulus about as in *mandibularis*.

Wings (Figs. 19, 20): Forewing stigma broad, 3.2 times longer than wide, with r arising slightly distad its midpoint; 2RS nearly as sinuate as (RS+M)a, 1.3 times longer than 3RSa; 3RSa 2.25 times longer than r; 3RSb ending almost at wing tip; (RS+M)b present and fairly long, roughly 0.2 times length of m-cu; 1M weakly curved posteriorly; 1cu-a inclivous, post-furcal relative to 1M by 0.35–0.40 its length. Hind wing m-cu reclivous, but not recurved, distinctly pigmented slightly more than halfway to wing margin.

Metasoma: Petiole 1.3 times longer than apical width; apex about 1.8 times wider than base; sculpture, dorsope, and laterope as in *mandibularis*. Metasomal terga unsculptured beyond petiole. Hypopygium as in *mandibularis*. Ovipositor tip with dorsal node and a barely perceptible, more distally placed secondary tooth. Ovipositor sheath with setae about as in *mandibularis*, with setae slightly more closely spaced in longest row; sheath distinctly shorter than body, about 1.6 times longer than mesosoma.

Color: Dark brown to black; petiole brown basally, yellow-brown apically; tegula, T2, trochantellus dorsally, and apices of fore and mid femora yellow; palps whitish.

Male.—Length 3.8–4.5 mm. About as in female except temple larger, eye 2.5 times longer than temple; antenna 37 segmented; first flagellomere 0.85–0.90 times length of second; yellow coloration on legs and metasoma slightly more extensive, with petiole completely yellow.

Discussion.—The plant host is a member of the Araceae. The type series came from a sample of tephritid puparia, isolated from 200 fruits, that also produced *Trirhithrum*

inscriptum (Graham) and *T. nigrum* (Graham).

Etymology.—The species is named for Wilberforce Okeka, who assisted in the collection of fruits and identification of plants in Kakamega forest.

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